

# KERAMIC STUDIO

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THE Spring Design Competition closes the fifteenth of this month. The new subjects promise to bring forth some interesting work and we trust not to be disappointed. The interest everywhere displayed in designs for children's use, is bringing forth good fruit.

We call attention to the treatment of Thorn Apples by Miss Jeanne Stewart, in this number. By mistake the treatment for cherries was put under that study in the February number.

The juries of selection for the St. Louis Exposition meet this month in New York. There is a good note of promise for the Crafts worker in the fact that all works of decorative art—metal and wood work, pottery and china decoration, weaving, etc., etc.—are to be admitted to the Fine Arts Building along with painting and sculpture, on their artistic merits. Heretofore "Art" has meant painting and sculpture alone—now it includes all decorative and crafts work.

We have, of late, had many inquiries in regard to the buying and decoration of table ware, and many kindred questions. We will try to answer all these queries in a few words, which we trust will be helpful to many of our readers.

As to whether it is better taste and economy for a person of moderate means to buy an entire set alike for her table: A simple, plain set throughout is, of course, always better economy and if well chosen, is in good taste. But a variety in design, well adapted to the shape of the dish and to its use, is a great incentive to appetite and tends greatly to enliven the conversation and make a cheerful feast.

For one of moderate means who can decorate her own china it will be quite as simple a matter to have the designs varied for the different courses as to have them all alike, as far as cost is concerned. If one is buying factory decorated ware, it is of course cheaper to buy the entire set alike in design. However, if we could not decorate our own china or find one of the sets mentioned later, we would prefer a plain white to a decorated set, as the factory decorations as a rule are very inartistic. The plainer the shape, the simpler and more conventional the decoration, the finer the ware in color and translucency—the better the taste displayed. A faint cream tone in porcelain is more agreeable than the bluish tint often seen. If we can decorate our own china a variety in unity is suggested, as for instance, decorate the entire set in blue and white, in red and gold, in blue and green or some one color scheme. Make the service plate, the platters, vegetable dishes and all dishes for entrees or dishes which remain on the table throughout the dinner, with a simple border of strictly abstract motif combined with lines or bands of color, such as the designs shown in the Class Room (KERAMIC STUDIO, August 1903), making a border of  $\frac{3}{4}$  to  $\frac{1}{4}$  inch wide with a rim and inside line of color. For oyster plates a simple border of conventionalized shells or sea weed—such as the prize design by Miss Peacock, May 1903, K. S. For fish, a conventional fish or wave design similar to the one by Mary Simpson, February 1904, K. S., which received honorable mention. For soup, a design closely convention-

alized on the order of the prize design of Harebell, December 1903, K. S., of some aromatic plant which enters into the make-up of soups—such as bay leaf, parsley, thyme, sweet marjoram, etc., etc. For game, the plate exhibited by Marshal Fry shown in February 1903, K. S., makes a good model, using any game bird in a simple design border. For mushrooms, the motif for conventionalized border suggests itself immediately. For salad, a design made of any of the succulent plants or other ingredients of this greatly varied dish. For the dessert plates, flower designs are always in order and can be more elaborate. For the fruit plates of this course many good conventional designs have been given in K. S. The coffee cups should be decorated to match the main service. The small plates under finger bowls can have any desired motif and on these and the dessert dishes one can give rein to one's fancy.

When one has not the time or means to make such a variety, it would be best, perhaps, to use a few simple geometrical or conventionalized flower designs in the same color scheme on five different sized plates, each of which could be used appropriately for one course or more.

For one who cannot decorate her own china, the Japanese blue and white, the Dresden onion, North or South German, pattern in blue, the Canton or Nankin china or the Willow pattern will be found serviceable and in good taste. The Japanese ware is of course daintiest but breaks easily. The German onion pattern is found on all grades of ware. The Canton is heavy but good in color and wear. Nankin is finer but more costly. The modern Willow pattern also comes on all grades of ware and one must be guided by one's pocket-book.

For breakfast, lunch or tea the blue and white is particularly fresh and attractive and each of these varieties of blue and white has its own claim for preference. The selection will be mainly a matter of choice between the fragile and dainty, the artistic and serviceable.

The question is asked as to what china is appropriate for dinner, *formal* and *informal*. Personally we do not believe in *formal* dinners—"a feast of reason and a flow of souls" should always go hand in hand with that jovial meal—but if one must needs give a funeral feast, gold and white would perhaps be not too gay for the grave nor too grave for the gay.

The question "Is hand painted china for table ware in good taste in large quantities." rouses the craftsman in our soul. Decidedly! Let us have hand-work! The more of it, the better, and the better hand-work, the nearer heaven!

The personal touch at the table where only it often happens we meet our friends, gives the crowning zest to the appetite and the key note to good fellowship.

An afterthought—When we demand hand-work, we mean head-work as well. The mistaken china painter who splashes big flowers all over her plates, to be messed up in gravy and garnished with pickles—or who paints dainty cupids to be drowned in soup, is decidedly absentminded, to speak in mild terms. Anyone who attempts a conventional decoration can not go so very far wrong and practice will make perfect.

And when we use the terms "large quantities" we refer to the amount of decorated china, not the amount of decoration on each piece.

## KERAMIC STUDIO

### TREATMENT OF RAMBLERS

*K. E. Cherry*

USE Carnation for first fire—Yellow, Yellow Brown and Brown Green for centres. Second fire: use Rose with deepest shadow in Rose and Blood Red. For foliage use Apple Green, Moss Green, Brown Green and Shading Green. For stems use Brown Green, Violet and Blood Red.



### CLUB NOTES

The Providence Ceramic Club opened its Fourth Annual exhibition on the evening of December 9th, continuing two days. The exhibition was a pronounced success and showed a marked advancement over previous years. The members have been studying lustre under a very able teacher and the result was shown in some very fine bits of decoration. The club meets once each month for business and on another afternoon for practical work, drawing from some form of plant life and applying these drawings to some design for china decoration.

The Springfield Ceramic Club held their annual meeting January 12th, the meeting being preceded by a lunch at the Nayasset Club. The retiring president, Mrs. Frederic Goodwin, gave a resumé of the two years existence of the club, concluding with a few suggestions as to the future policy of the organization. The secretary's report showed the present membership to be 19. The following officers were elected to serve one year: President, Miss Ethel L. Valentine; Vice-president, Mrs. H. H. Bosworth; Secretary and Treasurer, Mrs. A. F. H. Pillsbury.



### SHOP NOTES

We are in receipt of a handbook of Pyrography issued by F. Weber & Co., Philadelphia. It is full of illustrations and valuable instruction.

We have also received the Mineral Decalcomanie Catalogue of Palm Fechteler & Co., New York, with a large list of transfer designs.



STEIN WITH SMALL BELL-SHAPED FLOWER—ALICE WITTE SLOAN

THIS can be treated in natural colors. Leaves, stems and pods green. The flower yellow, with purple spots near centre, calyx green. Outline in black. Background light brown or light dull blue. Black portions, darker shade of same. Black bands, dark brown, spaces between them and border to be left white. Or else the design could be simply

tinted in pale blue outlined in dark blue. Background pale dull buff. Black spaces, darker shade of same. Bands, dark blue.

In either treatment the dotted portion of background may be put in in an intermediate shade, otherwise in the lighter color used.





TREATMENT FOR RAMBLERS—K. E. CHERRY

# GRAND FEU CERAMICS

## IX—SAGGERS, PLACING AND SETTING

*Taxile Doat*



WHEN grand feu ceramics, grès or porcelains, are decorated and glazed, they must be set in the kiln for firing. The operation of setting consists in arranging the pieces in the lower room of the kiln, either free or enclosed in protective cases. When they are of grès biscuit, not covered with glaze, they can be fired on top of each other (Fig. 52), provided however that open passages for the flame have been left around them on all sides. During the firing the flames envelop and play upon these pieces, depositing unevenly on their surface a part of the alkalis, potash and soda, which the burning wood produces. These alkali salts do not injure the grès body in the least, on the contrary, they give it the warm reddish brown tone so pleasant to the eye, and the semi-glaze which increases its permanence and density. Moreover, in some cases, in order to accentuate this coloring and glazing, a few pounds of sea salt are thrown into the fire mouths during the firing. The free setting of grès biscuit pieces in the kiln has thus the double advantage of producing this surface quality and making it possible to use the whole capacity of the kiln without losing any room.

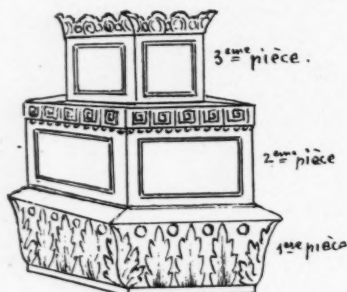


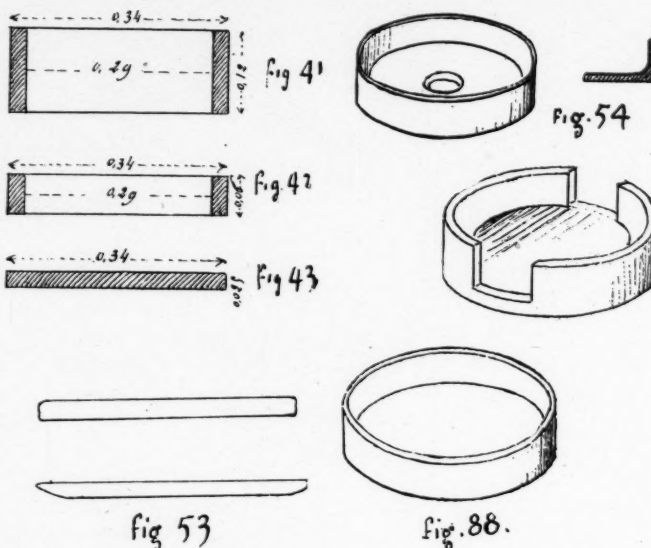
Fig. 52

It is not so with porcelain. The salts from the burning wood, if deposited on the pieces, would give them an unpleasant brownish tone. If the porcelain pieces are decorated and glazed, the effect of the salts is disastrous, causing a series of spots, consequently of flaws. It is therefore necessary to protect all porcelains, during every firing, whether in biscuit or glazed, as well as the glazed grès, and this protection is secured by hermetically enclosing them in fire clay boxes, which are called "saggers." The operation is called placing and is very important, as every thing which has to undergo the high temperatures of firing, must be arranged in the kiln with order and symmetry. The protective pieces are called, according to their shape, *saggers*, *rings* and *bats*.

The saggers are boxes with bottom (Fig. 40, p. 197, Jan. 1904 and 54). The rings, as the name implies, have no bottom (Figs. 41, 42 and 88) and they are used to raise the height of the saggers in accordance with the size of the pieces placed therein. The bats are round plaques or discs, which are placed on the bottom of the saggers to support the ware to be fired. They must be perfectly true to avoid their warping, which would involve that of the piece they support. These bats for bottom saggers (Fig. 53) must be distinguished from the similar pieces which are used for covers (Fig. 43).

The material which is necessary for this careful placing in

saggers is a source of trouble and a continuous expense for ceramists. It must be prepared in great quantities and made into varied shapes, cylindrical or oval, according to the ceramics to be protected. It constitutes the largest expense of all manufacture, large or small, because these utensils for firing must be made with clays of first quality, easy to work and at



the same time infusible. They must be capable of standing repeated firings without softening or cracking, as their softening would cause deformation of the ware, while their cracking will be accompanied with the projection of *grains* of dirt, which may glide over the round surface of vases, but will irreparably adhere to the glaze of plane surfaces, such as plates, plaques, bowls, etc.

The ideal material for this work would be an absolutely refractory clay of high plasticity, making possible repeated passages through the fire. But it is the geologist's work to find such a material for ceramists, and this ideal clay has not yet been found.

The paste to be used for saggers cannot be exclusively made of plastic clay, the drying of which would be too slow and very difficult. It is necessary to shorten the clay with an admixture of grog made from the same paste already fired, pulverised or in grains, according to circumstances. Pulverised for placing material proper, in grains for the making of blocks for the doors and especially for the covers of the fire mouths, also for all utensils in direct contact with the incandescent heat of the fire mouths.

At Sèvres, where all the placing material is given the greatest care, the composition of the paste varies in proportion of grog and clay, according to the use which is to be made of it. Here are the Sèvres formulae:

### Outside material in contact with flame

Clay of Provins	30
Clay of Sezanne	20
Grog	50
	100

### For inside bats

Clay of Dreux	20
Clay of Retourneloup	15
Crushed sand of Fontaine-bleau	32.5
Finely powdered grog	32.5
	100



For cover bats	
Clay of Dreux	21
Clay of Retourneloup	21
Very coarse grog	58
	100

The clay of Provins is bought at Provins (Seine et Marne) from Mlle. Chevallier-Baillat, 25 francs per 1000 kilos (\$5 a ton); the clay of Sezanne from Madame Vve Parisot, à Sezanne (Marne), 16 francs per 1000 kilos (\$3.20 a ton); the clay of Dreux from Mr. Gassel-Gigan à Brissard, commune d'Abondant, arrondissement de Dreux (Eure et Loir), 100 francs per 1000 kilos (\$20 a ton), higher than bread. The clay of Retourneloup is bought from Mr. Charles Collet, of Retourneloup, 40 francs per 1000 kilos (\$8 a ton).

After each firing, there is a certain quantity of placing material broken so that it cannot be used any more. The fragments and debris are ground in a mill and if the selection of these fragments has been carefully made, one will obtain grog for each kind of clay mixture, which can be used either as powder or in grains the size of wheat or the size of peas.

These technical details will enable the reader to realize the complication and expense of a careful manufactory like that of Sèvres, and also the impossibility of an ordinary and especially an isolated ceramist adopting this perfection of material.

For my part, having no mill at hand, I use, after many trials and failures, a grog made of all kinds of saggers, which is sold to me by the Ducouroy firm, 50 rue Nationale, Ivry-Port (Seine) for 60 francs per 1000 kilos (\$12 a ton). And the only formula for my placing material is:

Powdered clay of Provins	60
Ducouroy grog	40
	100

At the beginning of my work I had fixed to the ground in a corner of my studio a cast iron plaque with checkered surface, and with a pestle I crushed the sagger fragments to make grog, but it was a slow and painful process which beginners should avoid.

The different phases of the making of saggers are the same as for porcelain, but with less care. Some are cast, others shaped on the wheel.

Before using, the paste must be carefully manipulated by hand and beaten. If the wheel is used, it should not be the same wheel which is used for porcelain so as to avoid any mixing of so different materials. The thickness of the sagger must be the same at every point, but the inner angle should be slightly rounded (Fig. 54). The bats are fashioned in lens

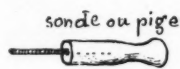


fig. 55

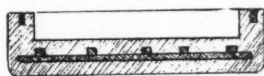


fig. 56



fig. 57

shape with a slight depression toward the circumference (Fig. 53). The thickness is tried with a small instrument called a *pricker* (Fig. 55). It consists of a point stuck in a round wood handle 1 inch in diameter.

It is very important to watch the drying of saggers, the edges losing their moisture more quickly than the centre. After being left two or three days in a draft, or subjected to a

very mild heat, as soon as they can be detached from the plaster discs which support them, they must be turned upside down, to avoid the warping of the edges, as the regularity of saggers and rings is the main condition for a good setting of the kiln.

In my own work both saggers and rings are thrown, only bats are cast. This casting is done in plaster moulds which differ from porcelain moulds only by their simplicity and thickness (Fig. 56). They are held by iron braces in their thickness to increase their strength, and on the upper rim to diminish the wear caused by scraping.

After having fashioned a thick plaque of clay well beaten by hand and of the size of the mould, it is pressed in this mould with a pad made of old sponges enclosed in a piece of sheep-skin (Fig. 57). This pad fixed to a wooden handle is kept constantly wet. To make the loosening of this disc of soft paste easy the inside of the mould is first sprinkled with sand ground to an impalpable powder.

I insist on the special care necessary for the making of this placing material.

Before being used it must be thoroughly dry, and even have received a beginning of firing. It is then baked at the same time as porcelain pieces are baked, when there is no baking chamber in the kiln, or it is placed in the baking chamber if there is one, during an ordinary firing.

The placing of porcelain constitutes an important operation which requires the greatest amount of attention. It is in no way as simple as the placing of faïences and grès, and is peculiar to the kaolinic clay which must be preserved from contact with the flame. It consists in setting in the kiln the pieces already enclosed in saggers, and no one setting will resemble another; at each firing, everything varies according to the number and especially the size of pieces. To a piece of each size corresponds a certain size sagger, which of course will make necessary a different arrangement of the bungs, unless one executes the same pieces repeatedly or does not make any piece which exceeds certain dimensions determined in advance. But, in any case, the setter will have to employ skillful modifications and unexpected arrangements every time in order not to waste any room, to well balance the pieces, to safely superimpose the saggers with the help of a plumb line, to lute them solidly to each other, and to know from the decoration of pieces what part of the kiln is most suitable for them.

The operation of placing in saggers and setting go together. The placing should be done on a table arranged as close as possible to the door of the kiln. As soon as a piece is placed, the sagger is at once set.

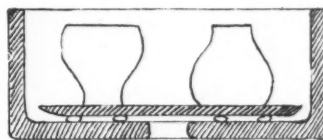


fig. 58

1st. Placing is easy when the piece is in the shape of unglazed biscuit. In this case it is sufficient to rest it on the fire clay bat (Fig. 58). And to be sure that there will be no adherence between the two, the bat should be covered with a thin coat of infusible wash. This wash is a very refractory powder made of

Pure calcined alumina	50
Washed kaolin	50

2nd. Placing is somewhat complicated when, notwithstanding a broad and solid base, the piece is glazed. The part of the bottom which will rest on the bat should be carefully scraped and brushed to remove any glaze which may have

been left after dipping, atomizing, brushing or any other mode of glazing. Without this precaution the piece and the bat would get stuck and in parting them violently, one would risk losing or at least seriously damaging the piece. As in the first case, and in every case for that matter, the bat should be well washed with the infusible powder.

3rd. Placing requires special care when the piece, whether of narrow or large base, is covered with flowing glazes. Then it should rest some distance from the bat on a small cylindrical column (Fig. 59) resembling a ring about  $\frac{3}{4}$  of an inch thick,

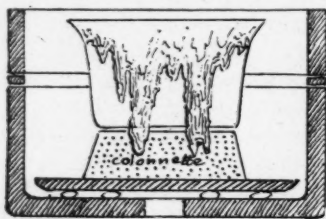


fig. 59

and the height of which varies according to the more or less flowing tendencies of the glaze. This height will be from  $\frac{3}{4}$  of an inch to as much as 2 or 2 $\frac{1}{4}$  inches. The little columns will receive the excess of glaze. They are thrown on the wheel and it is absolutely necessary to use the same material of which the vase is made, because of the shrinkage which would be different if two different materials were used and might cause the piece to fall from its support. The little column is strongly washed under its base and especially on top on the part which is in contact with the vase.

4th. Placing becomes an art when the piece is of such a shape that the flowing glaze must cover it everywhere as in the case of my vases made from fruit forms (Fig. 60). The

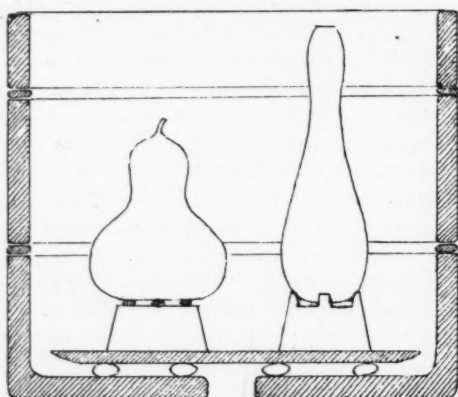


fig. 60

supporting must be done so that after firing, the vase will be detached without accidents from the excess of glaze in which it is steeped. To do this, I make a bat of the same material and the same diameter as the piece to be fired. This bat is strongly washed, and on the wash, I place at equal distances, 3, 4 or 5 small truncated cones  $\frac{3}{8}$  to  $\frac{1}{2}$  inch high, the points of

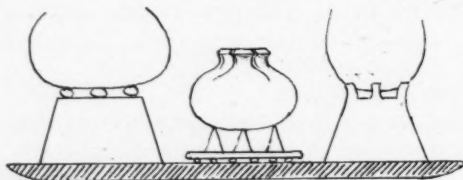


fig. 61

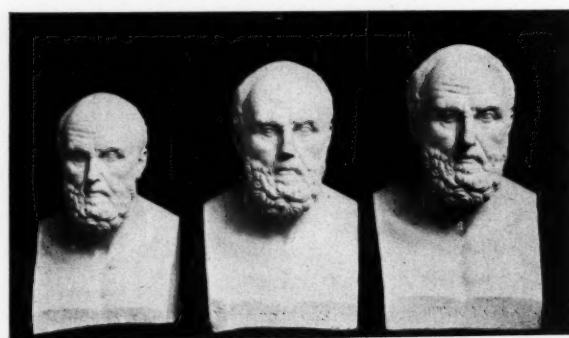
which are washed. On these cones the vase stands (Fig. 61). The glaze flows on to the cones and from the cones to the bat, and the bat having the same shrinkage as the vase there is no displacement of the latter. When taken out of the kiln, it is easy to detach it from the points without any damage.

In the first case there is no loss of pieces; in the second very little is caused by the placing. In the third case losses reach 30%. In the fourth they reach the disastrous proportion of 50%, because the vases being balanced on 3, 4, 5 or 6 small columns, if the least displacement of the bung occurs, the equilibrium is destroyed and the piece falls (Fig. 93). This



Fig. 93—Example of a piece which has fallen during the firing. These three pieces stuck to each other and to the bats, form one mass and can not be parted without breaking them. Every care had been taken in the placing.

easily happens as porcelain shrinks in the proportion of 10% of the natural height (Fig. 62); grès shrinks 12%. To this shrinkage must be added the movement of shrinkage in the placing material and the tendency of the kiln to yield to the pressure of combustion gases. One should understand that in the kiln everything plays, works, moves, and if the setter has not used the plumb line or has not an experienced eye, the rushes of heat from a too rapid firing may act on the piles of saggars so as to shake the vases like a ginger bread house.



Fired

Baked

Raw

Fig. 62

It will be seen that everything contributes to the destruction of the works of bold ceramists, if they do not display in their fight against the fire a good deal of skill and thoughtful patience. But all these precautions will readily occur to the mind of a man who risks in the fire six month of artistic work and all the money coming from former sales.



At Sèvres and elsewhere pieces made from fruit forms are cut off below (Fig. 63) so as to give a broad base and avoid losses. But in my opinion this solving of the difficulty is a mistake, the fruit having its interesting and architectural



Fig. 63

beauty in the attachments of the stem. To suppress this attachment by cutting is to destroy the main decorative quality of the fruit. To this method of securing results I prefer the chances of a 50% loss, which allows me to obtain unique and splendid ceramics.

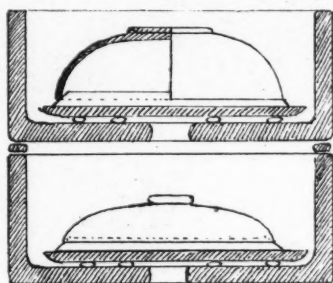


Fig. 64

Pieces with large opening such as bowls have a tendency to warp on the edges. To counteract this, the piece is turned upside down and it rests on its large opening (Fig. 64). This will make necessary a second firing for the glazing of the edge which has been left bare in the first firing. In this second firing, the piece having undergone its shrinkage cannot warp any more and will rest on its foot (Fig. 65).

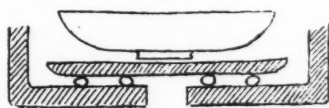


Fig. 65

I insist on the necessity of washing (covering with infusible wash) all the points of contact of pieces with their supports, because a porcelain body, when softening and vitrifying at its highest point of firing, has a tendency to adhere to the support. If the firing is not hard this will not be very noticeable, but if there has been a little too much heat all pieces not sufficiently washed are stuck, and must be detached with blows of a wooden hammer. I have lost some fine pieces for neglecting this detail in the midst of all the other placing precautions.

(To be Continued.)

#### NEW INDUSTRY FOR THE BLIND

AN interesting experiment in the industrial education of the blind is now being made at Chicago by Mrs. S. S. Frackleton, the well-known originator of the interesting gray and blue ware. She has undertaken the task of teaching the art of the potter to a blind girl resident of the Industrial Home for the Blind, Chicago, and the experiment is being watched with the hope that it will prove so successful as to furnish a new incentive for the industry of the sightless in other institutions.



AT the last meeting of the Advisory Board, the plans were definitely formulated for the receiving of the exhibit for the Liberal Arts Building, and circulars of instruction have accordingly been mailed.

It was voted that the entire exhibit should be sent to New York about April 1st, there to be judged by three judges selected by a committee from the League, who will fill out blanks as in the previous comparative exhibitions. This does not take the place of the work of the Exposition Jury, which will not act until after the exhibit has been installed in St. Louis.

The information concerning the exhibit for the Arts Palace is still delayed.

The travelling comparative exhibition has been returned to New York, and the various pieces distributed to their owners. These exhibitions have called forth many expressions of satisfaction as to their usefulness, notwithstanding the drawbacks which have occurred. Placards giving the markings of the judges were prepared as a valuable adjunct showing in what ways they considered the pieces worthy of study. These, with the drawings, an important part of the exhibition, disappeared in the summer and were found too late to be of service.

One club was disappointed entirely, and another, with considerable expense and trouble, was obliged to arrange for an exhibition twenty-eight days late.

It has been thought well to mention these facts, in order to emphasize the responsibility of all connected with such an enterprise, and how each must give the push to the wheel at exactly the right moment in order to keep the machinery moving.

We learn that a number of clubs have taken up courses of study under competent leaders—a significant fact.

The tri-ennial election will take place in May, when another mile stone will be passed in the journeyings of the League toward a higher plane of excellence.

We would like to call the attention of the clubs to this election, that they may be considering nominations.

IDA A. JOHNSON,  
President.

#### LIMOGES PORCELAIN

THE past year has been one of the most successful in the history of the ceramic art in Limoges. The disposition of the output remains practically the same, viz, five-sixths is exported to the United States. All shapes, designs, and decorations are gotten up for the market of the United States; every fluctuation or change in that country are carefully noted and felt.

There is a gradual change taking place in the styles of decorations—decalcomania, which superseded hand painting as a cheap method of decorating some years ago, is yielding by degrees to higher and more artistic styles; soft underglaze colors are so applied as to produce fine effects.

Every year shows that Limoges is more and more dependent upon the American trade, and if American porcelain factories were able to supply the domestic trade it is certain that the kilns of Limoges would remain unfired.



BARBERRY DESIGN FOR PLATE—ELIZABETH HALL

This design is to be carried out in blue and green, use Banding Blue and Black with a touch of Ruby Purple for the Blue and for the green Moss or Royal Green. The design can also be treated in Copenhagen Blue and Grey.





TABLEWARE—MAUD MASON

## SOME TABLEWARE DECORATIONS

THESE photographs of tableware exhibited by Miss Maud Mason, were received too late for publication with the article on the exhibit of the New York Ceramic Society. Although interesting in design, the chief beauty lies in the color which can not easily be described. Of the three plates selected as most representative from a goodly number, the design of orange trees was perhaps the most attractive—carried



MISS MAUD MASON

out in rich orange, blue and green. The centre plate and bowl were in grey blue, the other plate in greyed tones of blue, orange and green which were exceedingly effective. The stein was carried out in blue greys and the claret pitcher in olive tones, the lemons being yellow with an olive tinge. It was unusually complete in design and color.

## TREATMENT FOR PLATE IN THORN APPLES

(See design in February K. S. called "Cherries" by mistake.)

*Jeanne M. Stewart*

THE colors used in the bright little berries are the same as in currants, namely Dresden Yellow, Red, Pompadour No. 23 and Stewart's Pompadour with which a little Ruby Purple has been mixed. In some of the upper berries which are not quite ripe, Lemon Yellow and Yellow Green may be used. The leaves of the thorn apple may be very vivid in coloring at time the fruit is ripe. One or two of those most prominent are laid in with Lemon Yellow, Yellow Brown, Brown Green, Pompadour and Chestnut Brown, the Yellow predominating.

A touch of Yellow Red at the tip will give more brilliancy. More of the green tones may be used in the remaining leaves.

A pretty harmony may be obtained by keeping the background in Yellows and Browns. Ivory Yellow, Yellow Brown and Chestnut Brown may be used. In the third painting the darkest parts of the background may be powdered with same colors as used in painting, throwing parts of the design under the color, giving an underglaze effect.

## STUDIO NOTES

Mrs. Sara Wood Safford of New York has returned from Florida where she has been making studies of flowers and fruits as a rest from the routine of class work.

Miss Jeanne M. Stewart of Chicago leaves for Europe the first of May for a year of study abroad.

Mrs. Katherine Cherry of St. Louis intends to spend the rest of the winter in California making water color studies of flowers and fruit. We expect to give a number of her clever drawings in KERAMIC STUDIO.

Miss L. M. Smith and Miss Jessie Berryman have opened a studio at 423 Boylston Street, Boston.





BARBERRIES—LENA HORLOCKER

Treatment on page 262.



LENA HORLOCKER

## AMERICAN CLAYS FOR PORCELAINS AND KILN USE

Charles F. Binns



THE articles by M. Taxile Doat now appearing in these pages are of the highest importance to every one interested in the progress of the ceramic art. Coming, as they do, from the pen of one who has himself performed those things whereof he writes, they constitute the most important pronouncement upon the production of hard porcelain which has appeared in the English language. Any one who has seen and handled M. Doat's dainty creations cannot but feel a glow of gratitude towards him for having with the utmost generosity laid bare his art to the brotherhood.

It is with the view of making the work of the famous Frenchman more useful to his American readers that these lines are penned, for it is very evident that clays and pastes cannot profitably be imported by those who desire to take advantage of the information given in the articles. Nor is there need of this for our own land contains clays as fine as any in the world and in the school over which the writer presides beautiful porcelains have been made from purely native materials.

Instructions for mixing and preparing body clay have already been given in the articles on "Clay in the Studio" and need not be repeated here. The procedure is the same except that porcelain clays containing no ball clay are very short and must be aged and well worked to develop plasticity. Fortunately however, we in America are placed under a considerable advantage in the possession of our Florida clay. This clay, while in reality a ball clay, having been washed away from the site where it was formed, is virtually a kaolin with a high plasticity. This clay may be obtained by the barrel from the Golding Sons Co., Trenton, New Jersey, or East Liverpool, Ohio, it is called simply Florida clay.

The following kaolins are suitable for use in porcelain bodies:

Harris Kaolin, the Harris Clay Co., Dillsboro, N. C.  
Georgia China Clay, I. Mandle, Clay Merchant, St. Louis, Mo.

Delaware Kaolin, the Golding Sons Co., Trenton, N. J., and East Liverpool, Ohio.

Ground flint and feldspar may be obtained from the:  
Illinois Mineral Milling Co., East St. Louis, Illinois.

The Golding Sons Co., or the Eureka Flint and Spar Co., Trenton, N. J.

The chief difficulty which will be met with in these last named materials is that they are rarely found, in commerce, ground fine enough for use in porcelain. Hence it is important that the maker of porcelain should instal some kind of grinding machinery.

Porcelain is an exotic in this country and the pastes cannot be bought ready prepared as they can in France, moreover, the making of porcelain is an art of extreme difficulty and half the battle is in starting right. One who is unable to undertake a reasonable outlay at the beginning has but small prospect of success and it is best therefore to carefully count the cost.

Porcelain can be made at temperatures ranging from cone 9 upwards, cone 13 being as high as one has ever need to reach. The limit is not in the body composition but in the glaze. Translucent white wares can be made as low as cone 4 but the true porcelain glaze is one without lead or boracic acid and this cannot be produced, in the present condition of the art, below

the temperature named. The mixture for a porcelain body to mature at cone 13 will be somewhat as follows:

Harris Kaolin	25
Georgia Kaolin	20
Florida Clay	15
Flint	25
Feldspar	15

and for lower fires the feldspar must be increased and the kaolin lowered.

The two kaolins are not absolutely necessary, but better results are to be obtained by using both than by either one alone

A porcelain glaze for cone 13 will be the following:

Feldspar	25
Whiting	11
Kaolin	19
Flint	45

For lower fires the kaolin and flint should be reduced.

Success in porcelain making depends, as will be gathered from M. Doat's articles, upon the proper proportion and use of saggars and other placing material such as rings, bats and props. No cheap clay will do for these, for the stress of the fire falls upon them and if they fail the whole of the labor will be lost. Many highly refractory sagger clays exist in the country, some of these are in use as glass pot clays and, while too expensive for factory use, may well find a place in the studio. Some of these clays are mined in a hard rocky form and must be purchased in ground condition or they will be useless. The following list of merchants and their products comprises all that will be necessary:

The Warrenite Co., St. Louis, Mo., ground Warrenite.

The Christy Fire Clay Co., St. Louis, Mo., ground glass pot clay.

W. H. Cutter, Woodbridge, N. J., sagger clay.

I. Mandle, St. Louis, Mo., Tennessee ball clay No. 1.

The Golding Sons Co., Trenton, N. J., Florida clay.

The Christy clay and Warrenite are not suitable for use alone, but are most valuable in mixtures; some plastic clay is necessary to combine with them. Tennessee ball clay is the most plastic in the list but not refractory enough for use alone. Florida clay is both plastic and refractory but expensive.

An important factor in the blending of sagger clays is "grog." This is the name given to any burned clay which is crushed and added to the mixture. The object of this is twofold, it helps to diminish shrinkage and thus to keep the forms true and it adds to the porosity of the pieces and permits the passage of kiln gases, thus making the fire more effectual. The preparation of grog is important. At first it must be made of pure calcined clay. After one or two burns the supply of broken bats and saggars is more than sufficient to supply grog.

In making grog for a beginning, the fragments of clay should be reduced to the proper size before burning as the dust can be used in mixing and there is no waste. Two sizes will be needed; for saggars the grog should range from the size of ground coffee to that of split peas, for bats and supports from the size of ground coffee to that of mustard seeds. A coffee mill is, by the way, an excellent tool for grinding the smaller sizes and an adjustable mill can sometimes be set wide enough for even the split pea size. Three sieves are necessary, having respectively eight, fourteen and twenty meshes to the linear inch. These can be made to lock together, the coarse one at the top, so that the whole sifting is but one operation. The crushed clay is placed on the coarse sieve, that which will not pass is re-crushed, that which lies upon the second is used for saggars, and that upon the third for bats and props. The dust passing through the third sieve is returned to the clay box for



use as clay. The two sizes of clay grains are now collected, placed in jars and burned at as high a temperature as may be available. The jars must of course be made of a good refractory clay. Such jars or crucibles are always useful and if, when practising at the wheel, a dozen or two of these be made as trials, they will prove a great satisfaction, they can be used many times.

In using sagger fragments for grog the same process is gone through except that the burned clay is harder to crush. In this case the dust is useful for various purposes. It can be mixed with the clay for lutes or can be worked up with a little plastic clay to use as stopping for cracks in the kiln. Of course the sagger clay itself can be used for wads but wad clay is needed at every burn while sagger clay, when once the supply of sagger is made up, may not be required for some time.

For sagers the following mixture will be found good:

Ground Warrenite	2	parts by measure
Coarse grog	2	" "
Tennessee ball clay	1	" "
	or	
Ground Christy clay	1	" "
Tennessee ball clay	1	" "
Coarse grog	2	" "

For bats the same mixtures will answer but fine grog

should be used. And for lutes or wads the grog is replaced by sagger dust. These mixtures cannot well be made as slips in the manner recommended for bodies because the grog would settle out. The best way is to mix thoroughly in the dry state and then to form the clay batch into a ring like the banks of a pool. Fill the pool with water and allow it gradually to soak into the sides. The clay can thus be worked up into a plastic mass without loss and with the minimum of "muss."

Sagger making is not easy. It demands considerable strength and skill but of course it is not impracticable even in the studio. M. Doat says the sagers may be thrown upon the wheel. The objection to this is the coarse grog which would cut the hands badly. In practise they are made by rolling a sheet of clay around a wooden drum of the right size. Care must be taken, however, to see that they are straight and true. For this they should be set on the wheel and turned with a steel tool. Bats may be either beaten out and cut or pressed into plaster molds. These are of course burned before use. Not so the porcelain bats upon which delicate pieces are set. The essence of these is that they shall contract with and at the same rate as the porcelain itself, hence they are made of the same clay and used before burning. Soiled scraps of porcelain clay should be set aside for this purpose. The stains and spots of impurities will not affect the shrinkage and good clay will be saved.



DANDELION DESIGN FOR CUP AND SAUCER—HARRIET B. HURD

THREE tones of grey blue on the white china, with dark blue outlines, or treat the design in gold, using Roman Gold in darkest part with a powdering of black dots. Light

Green Gold on part back of flower. Leaves left white, also flower; narrow bands Roman Gold; all outlines Black. A tint of Ivory lustre might be placed all over the china as a background.



DESIGN FOR PLATE—MRS. DANTE C. BABBITT

OUTLINE the design in black (equal parts Ivory Black and Dark Blue). The bands are green, Apple Green, Mixing Yellow, little Brown Green and  $\frac{1}{4}$  Aufsetzweis. The leaves are also of this, the flowers are blue, Deep Blue, Deep Purple,

touch of Black and for the second fire  $\frac{1}{8}$  Aufsetzweis. With the latter use turpentine only. Centres of flowers are yellow, little circles green. For the background of border use the blue mixture very delicately, giving almost a blue gray effect.





• *Silene stellata* •

SILENE STELLATA—EDITH ALMA ROSS

Commonly called "Starry Champion" or "White Catchfly." Flowers white, foliage greyish green.



TRAILING ARBUTUS OR MAY FLOWER IN WATER COLOR—MAUD BRIGGS KNOWLTON



TRAILING ARBUTUS OR MAY FLOWER IN  
WATER COLOR

*Maud Briggs Knowlton*

THIS little spring flower grows very close to the earth, and blossoms about the first or middle of April in the New England States, putting forth its beautiful pink and white blossoms after the first warm April rains.

The flowers should be painted in the centre with a delicate wash of Lemon Yellow and Emerald Green.

It would be well to paint the most important bunch of blossoms in white, leaving the paper for high light, and making tender grey shadows of Rose Madder and Emerald Green. Those bunches of flowers which are painted in pink, should be done with Rose Madder used delicately, while in some clusters a thin wash of Vermilion may be used.

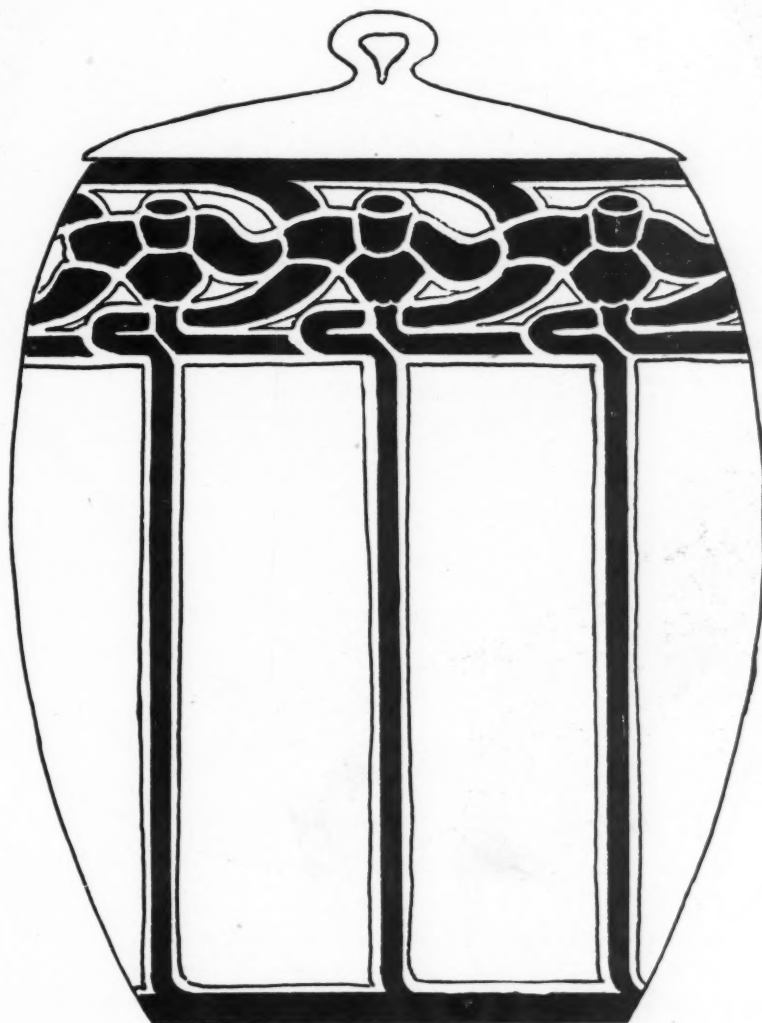
For shadows of pink flowers use Rose Madder with a little Cobalt. Centres of pink flowers are same as white. The very heart of the flower is a beautiful green made of Aureolin and a

touch of Antwerp Blue. Care should be taken not to get it too dark.

KAOLIN DEPOSITS

EXTENSIVE deposits of kaolin of a superior quality have recently been discovered in Western Kentucky by a company prospecting for lead. The samples that have been tested by experts are pronounced to be the finest yet discovered in this country. There is an unlimited supply, and practically all is free from foreign matter of any description. A company has been formed in Owensboro, Ky., to develop the deposits and they hope to have them on the market in the near future. All the lands have been leased or purchased, and besides kaolin there is an unlimited supply of fire clay, standing tests up to 4000°F.

W. F. Keates of Lisbon, Ohio, has the management of the Company. Samples may be had by writing him at Owensboro, Ky.—*China, Glass and Pottery Review*

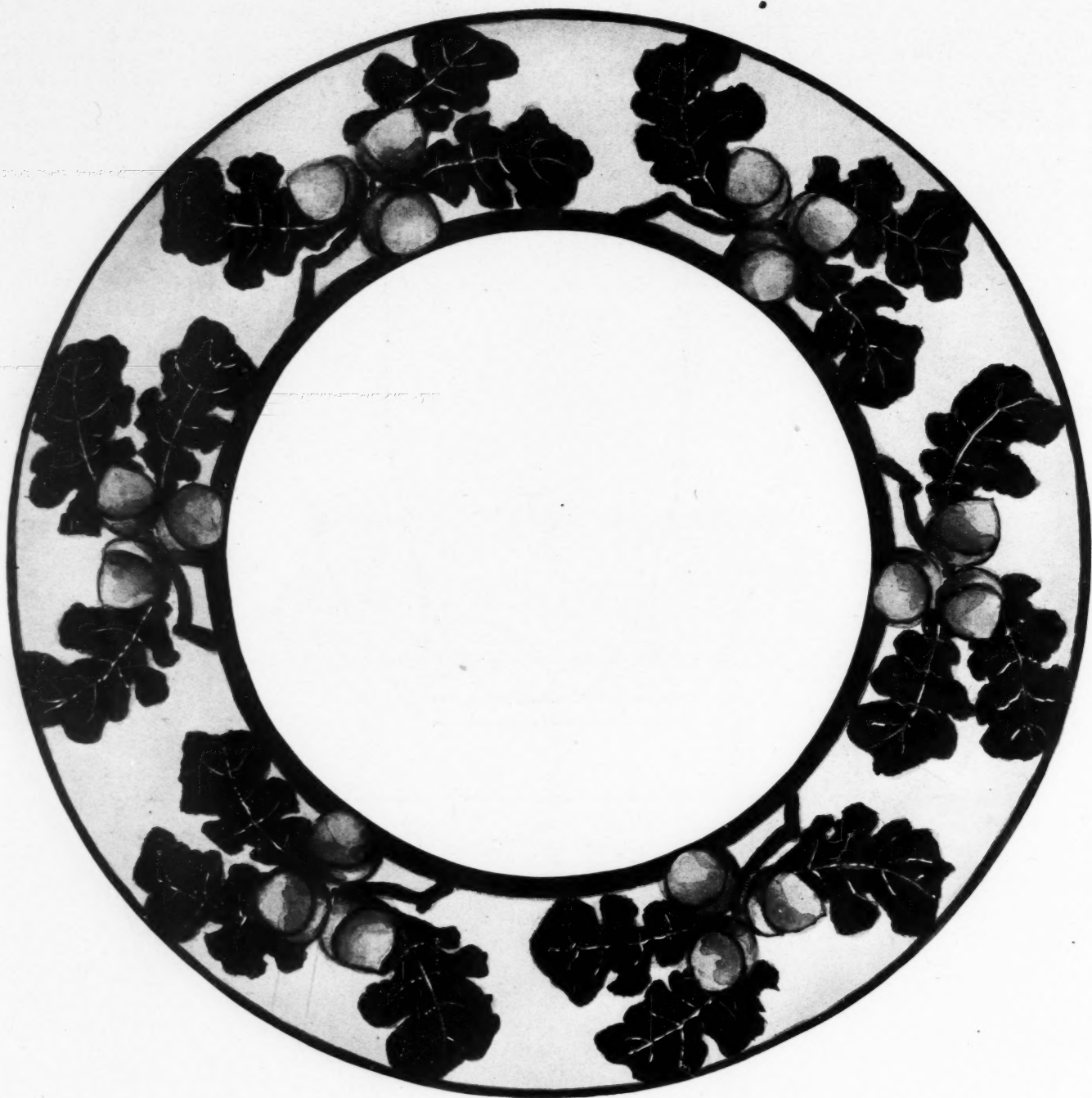


DAFFODIL DESIGN FOR CRACKER JAR—MISS AUSTIN ROSSER

THE design may be laid in a flat tone of soft greyish green without outline. After firing ground lay the entire surface of china with green glaze with which a little black has

been thoroughly mixed—just enough to soften the tone.

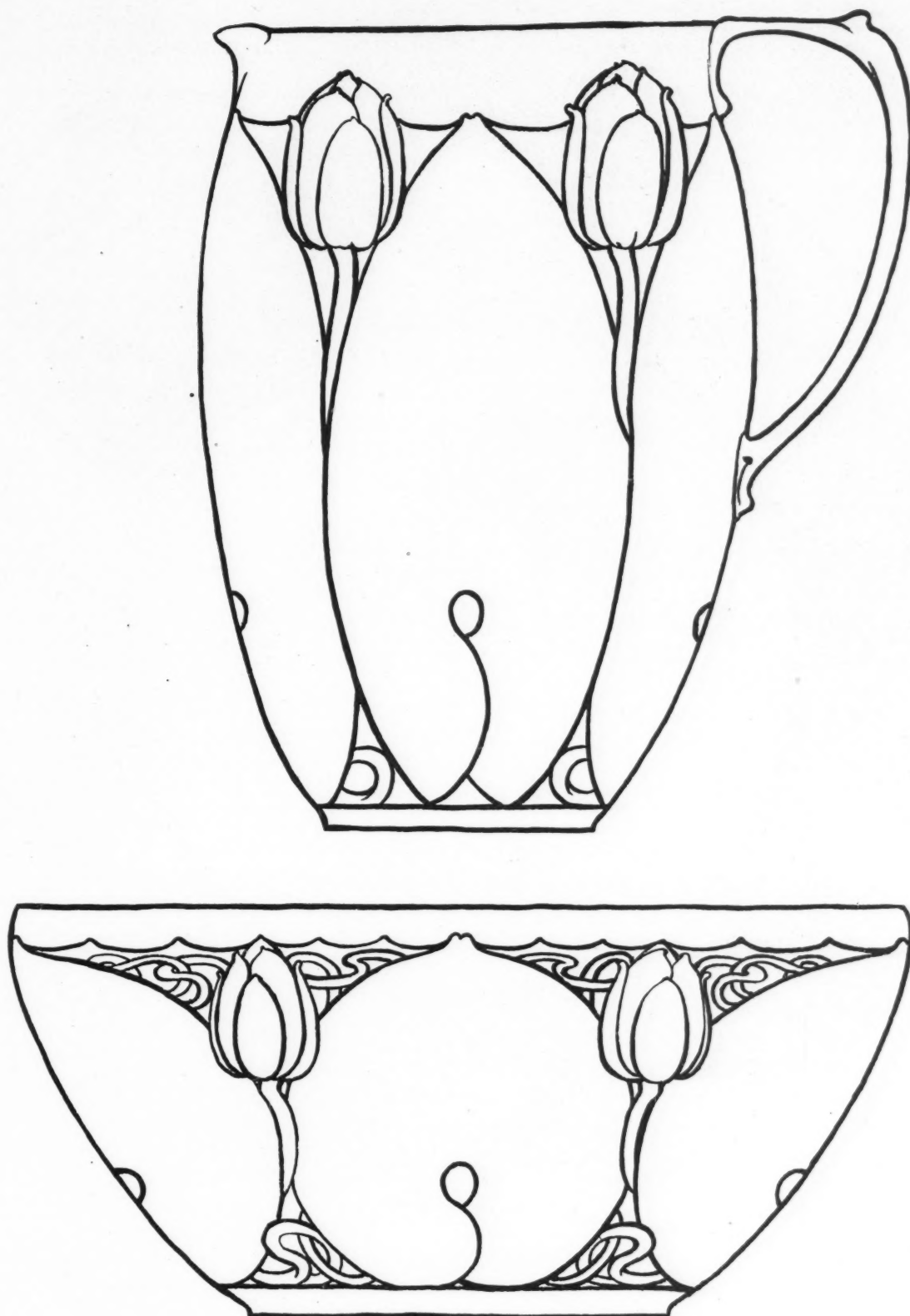
The strong contrast shown in the pen and ink drawing should be avoided in this or any monochrome treatment.



DESIGN FOR PLATE—EDITH H. LOUCKS

Ground of border a dark blue, using Banding Blue with a touch of Ruby Purple; leaves and stems a dark royal green; acorns, Pompadour Red with a little yellow Brown, not too dark; acorn cups, Yellow Brown.





BOWL AND PITCHER—ARTHUR KIDD

This design is especially suitable to a wash bowl and pitcher. A good color scheme would be: leaves and stems grey green or yellow brown or green lustre, buds and ground white, outlines gold.

## THE CRAFTS

WOOD CARVING AND PYROGRAPHY. LEATHER AND METAL. BASKETRY, ETC.

*Under the management of Miss Emily Peacock, 6 Brevoort Place, Brooklyn, N. Y. All inquiries in regard to the various Crafts are to be sent to the above address, but will be answered in the magazine under this head.*

### BASKETRY—KNOT STITCH

Ava M. Frochlich

THE knot stitch is also known as the lace or knit stitch. It is in reality a coil bound by the material giving the effect of a knotted lace, knit or crochet work.

Many different materials may be used as a foundation for this effective stitch, much depending upon the size and shape of the basket.

Round reed of any size may be used. A very small reed worked with a fine strand of raffia makes a closely woven basket of beautiful texture. But it will require time and patience.

Half round reed, sweet grass, soft coils of any size, such as imperfect grasses, second quality raffia, corn husk, jute roping, heavy twine, are, when firmly worked, very well adapted to these coil stitches.

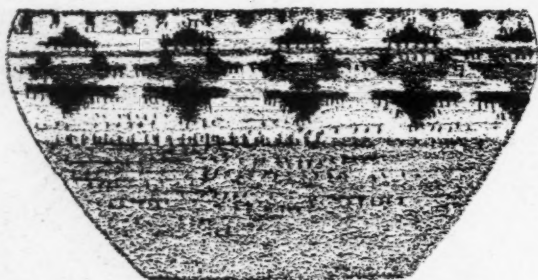


Fig. I

PLAN

Plan the shape and the decoration of the basket as in Fig. 1. Decide how many units are to appear as a design. Lay out the top view of the basket by dividing the circle into as many parts as there are units similar to Fig. II. Compare the plan frequently with the work and where the color is to appear, splice the raffia as explained in Lazy Squaw stitch, *KERAMIC STUDIO* for December 1903.

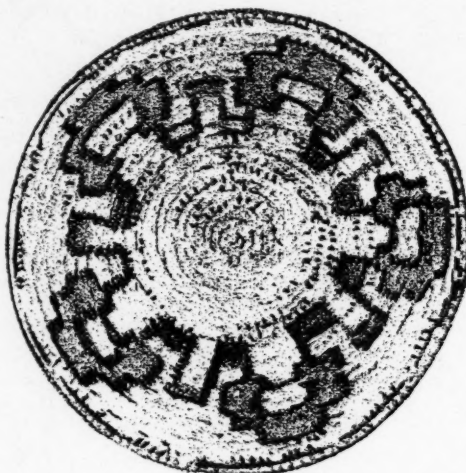


Fig. II

Start coil as in Lazy Squaw stitch and begin the knot after binding the centre firmly as in Fig. III.

This is one of two ways of making the lace stitch:

Wind the rattan *b* with raffia *a* for the space of one quarter of an inch toward the right. Bring the needle through from the back, catching under the preceding row to bind the new coil to the last one. Throw the raffia over the new coil and then bring it forward underneath at the right of the binding stitch. Place it in front of this stitch and through to the back at the left of it. This completes the knot and we are ready to wind the coil for a quarter of an inch and proceed as before, keeping the stitches as even as possible (Fig. IV.)

Many will prefer working toward the left. The order of procedure is then reversed.

Wind the raffia over the coil toward the left (Fig. V.) Loop the raffia over the new coil, after catching the binding stitch into the last coil, bring it underneath this coil forward at the left, over the stitch in front, through to the back at the right of it.

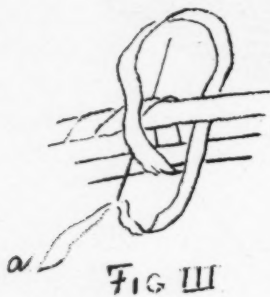


FIG III

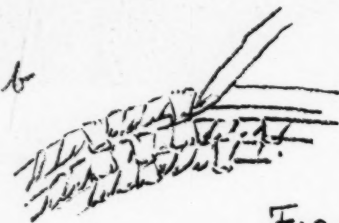


FIG IV



FIG V



FIG VI

Use few colors. Two colors combined with the natural raffia, such as two shades of brown, or brown and orange, or black and red, will be more effective than the use of more colors.

MATERIAL FOR KNOT STITCH BASKET SIX INCHES IN DIAMETER.

Rattan reeds, No. 3. Needle large enough to hold half of one strand of raffia, and best quality of raffia.

Wind coil as before and continue.

When the design is to appear, count the stitches in the last row and begin the design at regular intervals, allowing a little for irregularities in the raffia, keeping as close to the plan as possible. Change where the plan will not fit the number of stitches.

A profile as in Fig. VI cut from stiff paper is an excellent guide in keeping the shape.



A FEW SIMPLE DYES

*Brown.*—Boil Walnut bark or root until the dye is strong enough. Set color with strong alum water, either allowing it to soak in the alum solution before dyeing or immerse after taking out of the dye. Rinse thoroughly in any case.

*Orange.*—Diamond dyes used with care give good results, in many cases. They have their own mordant.

*Annatto.*—Annatto yields strong rich orange. Set in alum solution an ounce of alum to one gallon of water.

*Black.*—Logwood one ounce, a piece of Copperas half the size of an egg. Two gallons of water. Boil until dye is dis-

solved. Strain, and allow the raffia to remain in dye until a good rich black is obtained.

*Reds* are produced easily by the use of Diamond dyes. Many different shades may be obtained by experimenting with the Light Red, Vermillion and Deep Red, used either in combination or alone.

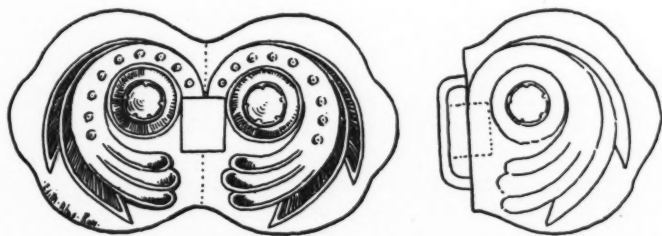
Cochineal is a good red. Use as a mordant for it, four parts of cream of tartar and six parts of Stannous Chloride. Indigo is the dark blue, and combined with fustic makes a bluish green.

All dyes should boil very slowly.

Materials must be left in the dye until the required shade is obtained. Then set in alum water and rinse thoroughly.



DESIGN FOR MIRROR—FREDERICK G. WILSON



Design for Silver Clasp, enameled or hammered, and set with jade or amethyst, by Edith A. Ross.

DESIGN TREATMENT FOR MIRROR

Katherin Livermore

IN outlining this, be very careful to keep on the outside of the drawing lines, otherwise the delicate petals will be obliterated.

The wavy background lines are simply outlines made strong and very close together.

Put a light wash of gamboge over the flowers and sap green over the leaves and stems; shade leaves with olive green, the flowers very delicately with brown madder strengthening the yellow in places. Wash in a little green towards the center.

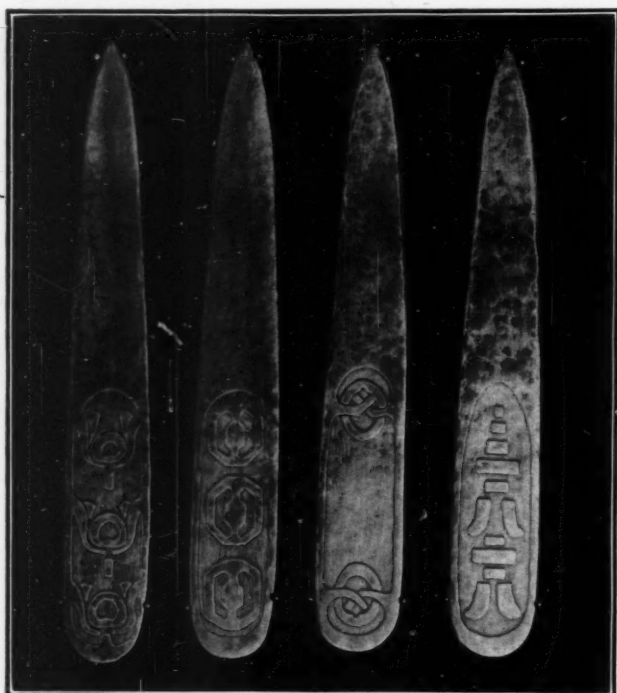
## BLOTTING PADS.

*Emily F. Peacock*

THE blotting pads by Miss Place and Miss Johnson, of Pratt Institute, are good examples of simple wood carving. Both sides of the pads were left perfectly plain and all the wood part finished in the natural color.



For the centre blotting pad a piece of dark brown leather was tooled in low relief and glued neatly into the space cut out for it in the top piece of pad. The wood part was stained a dark brown, and given a dull finish.



## FOUR PAPER KNIVES

*Emily F. Peacock*

MAKE the paper knives in copper or brass as described in the July number. Then put the hammer marks in with a round faced hammer. Paint in the design and etch the background slightly. Color with Chloride of Antimony and when this is dry rub gently with a little rouge and oil.



## NOTES

"The Gotham Shop of Arts and Crafts" is the quaint sign of a new firm of crafts workers lately started in Denver, Col. by two young women from Pratt Institute, Brooklyn, Miss Genevieve Butler and Miss Mabel Munson, together with

Harold C. Butler. They will have in the shop all sorts of crafts work and carry on as well the business of interior decorating.

The Guild of Arts and Crafts will hold its spring exhibition at 109 East 23rd street, March 22d to March 26th. All exhibits must be received by March 20th.



## COPPER COFFEE POT

*Emily F. Peacock*

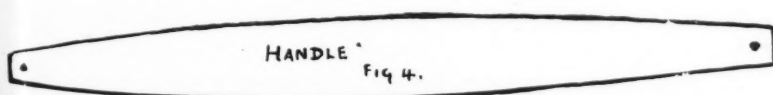
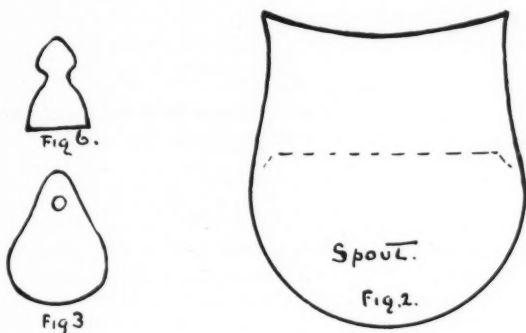
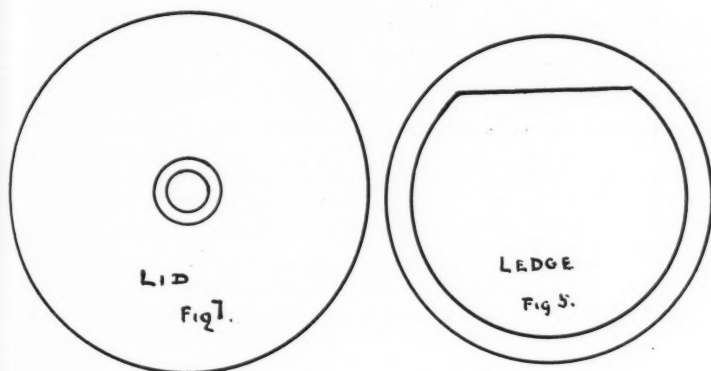
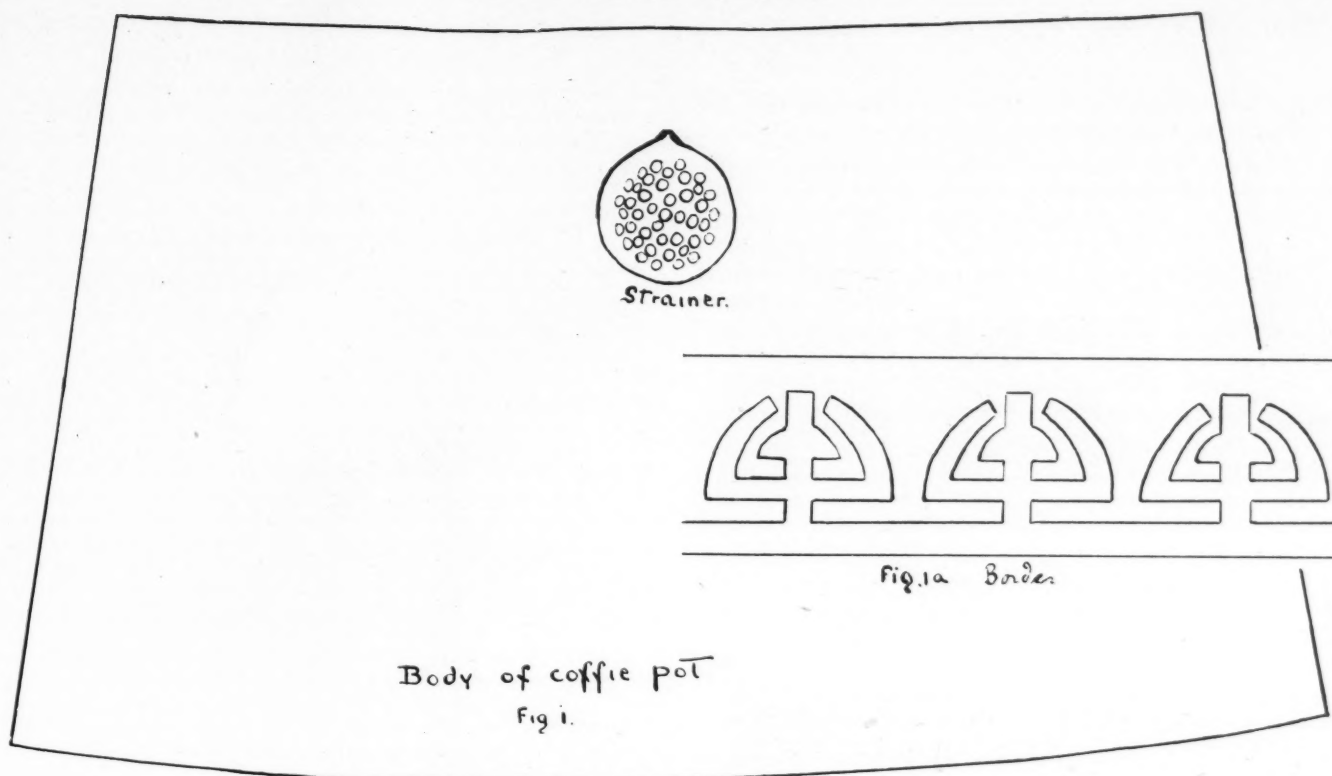
THE quaint little copper coffee pot was adapted from one surely made by an Oriental. Use Gauge 22 for the body part and Gauge 18 for the handle and small pieces connecting the handle with the coffee pot. First cut out the body of pot (Fig. 1), and solder the two straight edges together from the inside. This seam comes in the back of the coffee pot. Trace on the design Fig. 1a, and mark it in with a steel point, fill the cylinder shape with cement and put it on the pitch ball.

Chase the design with a broad tracer, turning the cylinder on the pitch bed as each part of the design is finished. In the front part of the coffee pot drill the holes for the strainer as indicated. Cut out the spout, and solder the two edges together down to the dotted line (Fig. 2). Shape the bottom part of the spout by beating it on a block of wood slightly hollow. When in proper shape, fit it over the centre where the holes are drilled, and solder the spout in place. Cut a disc of copper for the bottom of the coffee pot, so that it fits very well just about  $\frac{1}{8}$  of an inch from the bottom, solder this in. The ledge for the lid (Fig. 5) is also a disc with the centre cut out. Fit and solder this into the coffee pot about half an inch from the top. Then the lid (Fig. 7) is fitted on the ledge, and a large flat headed rivet, filed into shape and soldered on head down, makes a good knob (Fig. 6).

The small pieces that connect the handle with the coffee pot (Fig. 3) are cut and shaped, then soldered on the front and back of the coffee pot, the handle (Fig. 4) being riveted to these.

The coffee pot must be silver plated or tinned inside before it is used.





# ANSWERS TO INQUIRIES

\*\*—A nail set is a solid steel punch with a slight hollow in the end. See Fig. 1, page 236, February number. When the nail set is used on metal for leather it makes a circle slightly raised in the centre.

We will give a design for a silver sugar bowl and cream jug later.

Jeanette.—In the answers to inquiries from A. U. Z. you will find information you ask for.

The tools for tooled leather are made in the same way as those for metal work. To begin with you should have a chasing hammer, a straight tracer, and a curved one. Then it depends on the nature of your work and the design, what other tools you need.

T. W.—A very good green color for copper is made by mixing the following:

Amonium Chlorid	31½ Grammes.
Copper Nitrate	31½ "
Calcium Chloride	31½ "
Distilled water	85.2 Cubic Centimeters.

Put this on with a swab, and let it stand several hours, then gently rub with a waxed cloth.

A. U. Z.—1. Semi-precious stones (unmounted) such as cats eyes, moonstones, amethysts, chrysolites, opal and turquoise matrix, can be purchased from Max Nathan, 45 Maiden Lane, New York City.

2. Metal tools of all kinds are kept by F. W. Gesswein, 39 John St., New York City. If you can get square bars of annealed steel in Hawera you could make your own tools. See January number. Sheet copper and brass is sold by most large dealers in hardware. Patterson Bros., 27 Park Row, New York keep an extensive stock. The higher the gauge the thinner the metal, 20 and 22 gauge are good numbers for repousse work. Sheet silver can be bought from C. S. Platt, 29 and 31 Gold Street, New York. Now it is 60c. per oz.

You can make the cement for repousse from recipe in June number, 1903.

3. A No. 4 enameling furnace made by the Buffalo Dental Manufacturing Co., Buffalo, N. Y., price \$35.00 is a very reliable one. The fire clay muffle is four inches high, four and a half in width and five and a half long.

4. Silver-work and Jewelry by H. Wilson, edited by W. R. Lethaby and published by Appleton & Co., New York, is one of the latest and best books on metal work.

5. The enamels used on metal are especially prepared for that purpose and cannot be used on china

## TREATMENT FOR BARBERRIES (Pages 248-249)

Leta Horlocker

IN the early September the barberry branches are hanging heavily with brilliant colored clusters of oblong berries,—in all the autumn colors—pale yellow, orange, greens, in light and dark shades, and luminous scarlets, the foliage being warm olive green. As the season advances the berries become a darker, richer scarlet, all in the same general hue of color. The foliage also changes, becoming lighter in color tones of yellow brown, ochres, reddish browns and greens, making a beautiful harmony of color for the rich transparent red of the berries.

Use Carnation, Orange Red, Blood Red, and for shadow tones add Ruby and a touch of Brown or Black to the blood red.

The barberry permits many varieties of treatment for decorative treatment.

Here is a suggestion in simple treatment, pleasing for a small vase or plate border: Tint the vase an all-over tone of color for the first fire—mix into Silver Yellow, Meissen Brown, a touch of Black and Blood Red, making a warm ochre tone. This having been fired and being a satisfactory shade of color, draw your design. For the leaves a wash of Olive Green, not too dark, and the berries, Pompadour with a touch of Black to modify the brilliance, apply this thinly for the light berries and heavier for the dark ones—joining two tones of the same color; outline the entire design in black.

## TREATMENT FOR RED ROSES (Supplement)

Teana McLennan Hinman

THE original of color study was painted in opaque color on tinted paper of a light tan shade. The following directions are for opaque color; the treatment for transparent color is entirely different.

A careful drawing is first made with charcoal as the surface of the paper is very delicate. The first tone is then washed over the whole study in clear large washes of red or green as the study requires for the shadow of the roses. The same color is used in both roses, Van Dyke Brown and Carmine, making the color a little deeper in the red roses than in the pink; in the red roses a little green in the darkest places will give depth. For the half tone of the pink roses a little Payne's Grey often produces the desired effect.

The greens are always made with the same colors, Payne's Grey, Indian Yellow and Prussian Blue, the amount of each color varied to suit the requirements of the copy, as blue will make the color colder in tone, yellow warmer, and Payne's Grey will make it darker. A little Carmine used with the greens gives a depth that adds to the general effect.

The background is a clear wash of Payne's Grey beginning at the top with the color thin and making it stronger, leaves are dense. This ground may be changed by using different colors. The small leaves and tendrils are of the same color as the background, a trifle darker with a clean cut outline. This done, the study is ready for the Chinese white; for the pink roses mix white with saffron and lay in the highest lights, use square brush and keep the stroke of the brush with the modeling of the rose. Mix the little green with pink for a half tone, as half tone of a pink rose is one of the important features, be careful to have it exact. For the red roses, the same colors are used with a touch of Payne's Grey in the deepest shade and a little Carmine in the lights to give the bluish color of the red rose. Always keep a dark rose wet while working at it; in this way the hard lines are avoided. The light shade of the leaves is produced with white Lemon Yellow and Emerald Green, the half tones by the Hook-

er Green and White and a touch of Carmine in the darkest shadows and Van Dyke Brown, if necessary.

By following these instructions and the copy, one should make a very good rose study and a picture, although it may not be an exact copy. One can copy a picture accurately if he so desires, but it takes an artist to make of it a picture.

## ANSWERS TO CORRESPONDENTS.

*This column is only for subscribers whose names appear upon our list. Please do not send stamped envelopes for reply. The editors can answer questions only in this column.*

*All questions to be answered in the Magazine must be received before the 10th day of the month preceding issue.*

Mrs. F. G. W.—For tinting we prefer not to use a ready prepared tinting oil as the mixture can be better adjusted to the surface to be covered and depth of color desired, if made on the palette when ready to tint. The general rule for tinting is: One-third as much flux as color, (except Apple Green, Mixing Yellow and Pearl Grey, which need no flux), as much fat oil of turpentine as color and flux combined, thin with oil of lavender until it flows freely from brush without being tacky. For a light tint use a little more fat oil and lavender. Asbestos platters are laid on the bottom of a kiln to make it thicker so that it will take longer to heat, give the upper part of kiln a chance to heat and so make the china fire more evenly. The water colors and water gold for china have been used with some success by a few artists but we consider these mixed with oil much preferable.

Mrs. C. S.—If you wish your gold very bright you must allow nothing to touch it. Put your lustre on and fire it first then retouch your lustre and put on your paste for raised gold. After this is fired if it is necessary retouch your lustre again, being careful not to let it run over the paste, then put on your gold in two good coats. This should finish the piece in good condition, but if your gold does not come out rich enough, it is possible to retouch it and fire again.

H. E. B.—Liquid bright gold can be used as a finish coat under Roman gold—firing it first. But this gold will not be as rich a color. There is no reason why it will not wear as well—any gold will wear off the handles if constantly used. If you rub flux on a porcelain painting, the reds will disappear and some of the yellows and the iron browns—the colors called Ivory Glaze, Violet Glaze, etc., etc.—will do somewhat the same thing, giving a glaze and monochromatic tone to the entire painting.

E. M.—If your colors rub off after firing they are certainly under fired or you use some chemical that has an injurious effect on the color. We do not understand the process of photographing on china but refer you to our advertisers.

J. A. C.—Lustre colors come ready prepared in liquid form—if too thick they may be thinned with oil of lavender. They may be used over any fired light color or gold but are best on the white china or gold. They do not come out well over heavy color.

Mrs. B. M.—You will find a treatment of cherries under the design of Thorn Apples by Miss Stewart in Feb. K. S., also cherries by Mary Alta Morris in December 1901, and wild cherries by Miss Stewart in March 1902. For Fox grapes use Banding Blue, Black with a touch of Ruby Purple, for the leaves and stems the same colors with Yellow Brown added.

R. P.—You will find an answer to your questions on the editorial page. We do not know of any literature on the subject.

A. W.—If your pink roses came out a brick color the plate was under-fired. Fire it over again and give it a hotter place in the kiln, the top is cooler than the bottom of a kiln. Outlines made in color with sugar and water will fire as permanently as with oil and turpentine. When several colors are given as background colors, they are usually put on separately and blended into each other in painting. You must use your judgment as to what tone you want, if you want a yellowish tone instead of yellow shading into pink, mix the colors together. There is a good Grey Green made both by Miss Mason and Mr. Fry. D K green 7 is a grey green and blue, carmine and yellow make a grey green.

Sister M. F.—Your request came too late for the Feb. K. S. You are right in suggesting that, when tiny black specks appear in light colors on china and appear to be in the china, that the fire has brought them out—your specks do not come from dust but from a poor piece of ware. Sometimes old china refired does the same thing. You cannot remove the specks.

Liquid bright silver comes out blurry when put on too heavily or when there has been moisture on the piece, as from the perspiration of the hand—you cannot brighten it, except to put burnish silver or gold over it.

M. D. S.—Dresden Relief White "Aufestzweis" in tubes is the most reliable enamel. When color is used with it no flux is needed. About 1-5 of color will tint it sufficiently, or less. When no color is used add  $\frac{1}{2}$  flux, for flat enamel use  $\frac{1}{4}$  flux and 1-5 color also. Red is complimentary to green, yellow to violet, blue to orange, etc., etc. See Mr. Froelich's article on color in Feb. number.



Mrs. McC.—Glass decoration is much the same as china decoration—the same paste for raised gold is used and the Roman gold for china can be used over the paste but gold to be used flat on the glass must be specially prepared as must be the colors and enamels. Write our advertisers for materials. Bohemian glass is best for amateurs to experiment upon but almost any kind of glass can be decorated. The glass must be fired to just red color in the kiln, a few experiments will have to be made to find the exact color for best results. The design is drawn on white paper and stuck on the under side of glass, it can then be seen on the surface and traced with India ink and when one section is finished the design can be moved along. Colors can be painted, tinted, grounded or put on in flat enamels as on china. When painted, white enamel must be put on underneath.

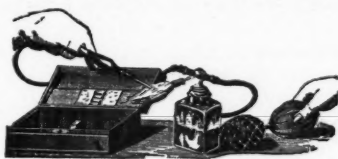
C. F. H.—We are sorry but do not know of any good alloys for gold used on porcelain. In the formula given in *Keramic Studio* April, 1902, for making gold, no alloy is used. The flux composed of twelve parts of nitrate of bismuth and one part pulverised borax is all that is needed to make the gold adhere to the glaze. Any alloy is sure to detract from the beautiful color that pure gold always is.

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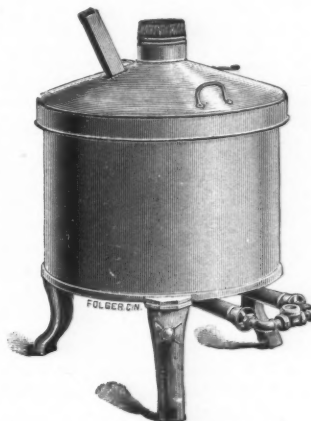
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